

CLAIMS

What is claimed is:

1. A method of processing a request for a plurality of Web services comprising the steps of:

storing, in a cache, a pattern object from a request for Web services and a list of watchers that invoked Web services responsive to detecting the pattern object;

receiving a new request for Web services specifying a new pattern object;

determining whether the new pattern object matches the cached pattern object;

if so, causing each watcher in the list of watchers to invoke an associated Web service; and

if not, causing each watcher in a system to analyze the new pattern object, such that any watcher determining that the new pattern object matches a provisioned rule invokes an associated Web service.

2. The method of claim 1, further comprising storing in the cache the new pattern object and a list of watchers that invoked Web services responsive to detecting the new pattern object.

3. The method of claim 1, further comprising the step of extracting the new pattern object from the request and storing the new pattern object in common memory prior to said determining step.

4. The method of claim 1, wherein each watcher is associated with a Web service and specifies a rule for invoking an associated one of the Web services.

5. The method of claim 1, wherein the pattern objects specify more than one Web service to be performed.

6. The method of claim 1, wherein each watcher analyzes the pattern object in parallel such that more than one Web service can be invoked concurrently.

7. The method of claim 1, wherein at least two watchers invoke an associated one of the Web services sequentially.

8. A method of processing a request for a plurality of Web services comprising the steps of:

receiving a request specifying at least two Web services;

storing a pattern object from the request in a common memory;

scanning the common memory with a plurality of watchers, wherein each watcher is associated with a Web service and specifies a rule for invoking an associated one of the Web services;

determining that the pattern object matches a rule of at least two of the watchers, such that each watcher having a rule matching the pattern object invokes an associated one of the Web services; and

storing a list of watchers that invoke an associated one of the Web services and the pattern object in a cache, wherein the list of watchers is associated with the pattern object.

9. The method of claim 8, further comprising:

receiving a new request including a new pattern object specifying more than one Web service to be performed;

determining whether the new pattern object matches the cached pattern object;

if so, causing each watcher in the list of watchers to invoke an associated Web service; and

if not, causing each watcher to analyze the new pattern object, such that any watcher determining that the new pattern object matches a provisioned rule invokes an associated Web service.

10. The method of claim 8, further comprising storing in the cache the new pattern object and a list of watchers that invoked Web services responsive to detecting the new pattern object.

11. A system for processing complex requests for Web services comprising:
 - a Hypertext Transfer Protocol server configured to receive a single request for more than one Web service;
 - at least one servlet configured to extract a pattern object from the request and to format a response to the request;
 - a common memory that temporarily stores the pattern object while the Web services specified by the pattern object execute;
 - a plurality of watchers, each watcher being associated with a particular Web service and including a rule for invoking the associated Web service, wherein each of said watchers scans said common memory in parallel to determine whether a stored pattern object matches a rule for invoking an associated one of the Web services;
 - a termination watcher configured to detect termination criterion, wherein the termination watcher provides the pattern object back to one of said plurality of servlets to generate a response upon detecting the termination criterion; and
 - a cache for storing pattern objects from requests and lists of watchers that invoked Web services responsive to detecting the pattern objects from the past requests.
12. The system of claim 11, further comprising cache logic for comparing pattern objects from received requests with cached pattern objects.
13. The system of claim 12, wherein said cache logic causes each watcher in a list of watchers associated with a cached pattern object that matches the pattern object from a received request to invoke an associated Web service, and, if no match is determined between pattern objects from received requests and cached pattern objects, said cache logic causes each watcher of said system to analyze the pattern object from the received request, such that any watcher determining that the pattern object from the received request matches a provisioned rule invokes an associated Web service.
14. The system of claim 11, wherein said watchers scan said common memory in parallel such that more than one Web service can execute concurrently.

15. The system of claim 11, wherein said watchers invoke more than one Web service sequentially.

16. The system of claim 11, wherein said watchers are further configured to modify the pattern object according to instructions provided from an associated one of the Web services.

17. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

- storing, in a cache, a pattern object from a request for Web services and a list of watchers that invoked Web services responsive to detecting the pattern object;

- receiving a new request for Web services specifying a new pattern object;

- determining whether the new pattern object matches the cached pattern object;

- if so, causing each watcher in the list of watchers to invoke an associated Web service; and

- if not, causing each watcher in a system to analyze the new pattern object, such that any watcher determining that the new pattern object matches a provisioned rule invokes an associated Web service.

18. The machine readable storage of claim 17, further causing the machine to perform the step of storing in the cache the new pattern object and a list of watchers that invoked Web services responsive to detecting the new pattern object.

19. The machine readable storage of claim 17, further causing the machine to perform the step of extracting the new pattern object from the request prior and storing the new pattern object in common memory prior to said determining step.

20. The machine readable storage of claim 17, wherein each watcher is associated with a Web service and specifies a rule for invoking an associated one of the Web services.

21. The machine readable storage of claim 17, wherein the pattern objects specify more than one Web service to be performed.

22. The machine readable storage of claim 17, wherein each watcher analyzes the pattern object in parallel such that more than one Web service can be invoked concurrently.

23. The machine readable storage of claim 17, wherein at least two watchers invoke an associated one of the Web services sequentially.

24. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

- receiving a request specifying at least two Web services;
- storing a pattern object from the request in a common memory;
- scanning the common memory with a plurality of watchers, wherein each watcher is associated with a Web service and specifies a rule for invoking an associated one of the Web services;

- determining that the pattern object matches a rule of at least two of the watchers, wherein each watcher having a rule matching the pattern object invokes an associated one of the Web services; and

- storing a list of watchers that invoke an associated one of the Web services and the pattern object in a cache, wherein the list of watchers is associated with the pattern object.

25. The machine readable storage of claim 24, further causing the machine to perform the steps of:

receiving a new request including a new pattern object specifying more than one Web service to be performed;

determining whether the new pattern object matches the cached pattern object;

if so, causing each watcher in the list of watchers to invoke an associated Web service; and

if not, causing each watcher to analyze the new pattern object, such that any watcher determining that the new pattern object matches a provisioned rule invokes an associated Web service.

26. The machine readable storage of claim 24, further causing the machine to perform the step of storing in the cache the new pattern object and a list of watchers that invoked Web services responsive to detecting the new pattern object.